eyes, which is particularly relevant in the context of the reduced transparency of the atmosphere in which light of such spectral range is spread.

In addition, some of the visual work in industrial plants (such as visual melt temperature control) is associated with the use of orange light. In the open access there are reports on the increase in the number of road accidents on the streets and highways of cities caused by white-range LED lighting. We must be aware that the primary purpose of lighting is the most effective solution to the problem of performing visual work of a certain level of complexity. The fact that the highway will be illuminated by energy-efficient light is a positive thing, but the truth is that the road must be lit in such a way that it performs its function as much as possible - for example, providing a certain level of passenger flow while respecting the conditions of pas-senger traffic safety.

The third, and perhaps the most important advantage of discharge lamps is the significant luminous flux of these devices. On average, it exceeds 3-4 times the corresponding characteristics for LED devices. To adequately compensate one street light fixture with an ZhKU lamp on the street, several LED analogs must be used, which is not attractive in terms of the high cost of such lighting.

Given this, it can be noted that the current scientific trends are developments - methodological, theoretical and experimental, related to improving the efficiency of some categories of luminaires with discharge lamps. One such category is the powerful industrial spotlight luminaires.

This work is aimed at solving the urgent scientific problem of finding ways to improve the design efficiency of industrial luminaires.

Based on a comparative analysis of modern luminaires with different light sources, the urgent task of creating new modifications of industrial luminaires with discharge lamps was determined. The calculation method of calculation of the profile geometry of the mirror reflectors of industrial luminaires is presented, which provides the necessary lu-minous distribution of the luminaire at a fixed power of the light source. Testing of the technique on the light sources DNAT-250 was performed. It is shown that the use of the calculation algorithms proposed by the authors made it possible to design a ZhSP-250 lamp with regulated G-2 light distribution for specific objects of operation. It is pos-sible to note the efficiency of the method both in terms of the accuracy of the calculations and the simple geometry of the reflector, obtained in the calculation method, which will allow to use simplified technological schemes for the serial production of such lamps.

МЕТОДИКА ПРОЕКТИРОВАНИЯ ПРОМЫШЛЕННЫХ СВЕТИЛЬНИКОВ С РАЗРЯДНЫМИ ЛАМПАМИ

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МЕТОДИКА ПРОЕКТУВАННЯ ПРОМИСЛОВИХ СВІТЛОВИХ ПРИЛАДІВ З РОЗРЯДНИМИ ЛАМПАМИ

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APPLICATION OF OPTICAL ABSORPTION METHOD FOR DEFECTOSCOPY OF OPTICAL MATERIALS

Today ionic crystals are widely used in devices for various purposes. In X-ray spectral optics they are widely used as crystal monochromators; ionic crystals are used in optical devices where lenses and transparent optical media (light filters) are made of optically pure materials - ionic crys-

tals. In general, the main positive feature of these materials is transparency regarding the transmission of radiation in the visible region of the spectrum (transmittance of about 0.9) and neutrality - that is, approximately the same reaction of the medium to different spectral ranges of radiation.

Ionic crystals are also widely used in detectors (scintillators, ionizing radiation dosimeters) and lasers. They are also widely used in acousto-optics and electrical engineering (lines of electrical signals delay, which gain efficiency due to the relatively small absorption of ultrasonic waves, and, therefore, it is possible to work with a wide sequence of signals probing the crystal).

It is known that when ionizing radiation passes through ionic crystals, color centers appear in them, which can change the spectral composition of radiation both in the UV region and in the visible range. For example, the simplest configurations of color centers (F-centers) lead to the appearance in optical materials of additional absorption bands localized on the wavelength axis with a maximum at the wavelength λmax = 248 нм , but more complex configurations of radiation damage in solids already lead to the appearance of absorption bands at wavelengths in the visible range.
This already presents some difficulties for developers and designers of relevant equipment, as changes in the spectral composition of radiation passing through the optical system of the device can lead, for example, to loss of efficiency of the selected radiation receiver, the main characteristic of which is primarily spectral sensitivity. Taking into account possible changes in the spectral composition of radiation is an important and urgent task of modern optical instrumentation.

The purpose of this work is the analysis and justification of a method that takes into account structural changes in externally irradiated ionic crystals.

The optical absorption method is analyzed in detail, which allows to perform quantitative and qualitative analysis of defects of radiation origin in optically pure crystals. The substantiation of the used relations is given, which allows to calculate the spectral index of attenuation of radiation passing through the optical medium (lens, light filter, etc.) and to correctly determine the volume concentration of color centers in the studied functional materials.

ПРИМЕНЕНИЕ ОПТИЧЕСКОГО АБСОРБЦИОННОГО МЕТОДА ДЛЯ ДЕФЕКТОСКОПИИ ОПТИЧЕСКИХ МАТЕРІАЛОВ

Е. Э. Лобанов, Г.А. Петченко

ЗАСТОСУВАННЯ ОПТИЧНОГО АБСОРБЦІЙНОГО МЕТОДУ ДЛЯ ДЕФЕКТОСКОПІЇ ОПТИЧНИХ МАТЕРІАЛІВ

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«HUMAN CENTRIC LIGHTING» У ЯК ІНСТРУМЕНТАРІЙ ПІДВИЩЕННЯ РІВНЯ БЕЗПЕКИ Й ЕФЕКТИВНОСТІ ВИРОБНИЦТВА*

За дослідженнями Міжнародної організації праці (МОП) до умов праці, що характеризуються підвищеним ризиком одержання травм, відносяться й такі, що відзначаються й незадовільними характеристиками освітлення робочої зони, тобто параметрами світлового пото-

*Human Centric Lighting (HCL) –штучне освітлення, характеристики якого адаптовані до процесів, що сформовані й протікають в організмі людини